

# HISTORIC PROPERTY INVENTORY FORM

## IDENTIFICATION SECTION

**Field Site No.** 271-T **OAHP No.** \_\_\_\_\_ **Date Recorded** 29 Feb 1996  
**Site Name Historic** Chemical Preparation and Services Building **Revised** 10 June 1997  
**Common** Office Building  
**Field Recorder** M.S. Gerber  
**Owner's Name** U.S. Department of Energy, Richland Operations Office  
**Address** P.O. Box 550  
**City/State/Zip Code** Richland, WA 99352

### Status

- ☒ Survey/Inventory  
☐ National Register  
☐ State Register  
☐ Determined Eligible  
☐ Determined Not Eligible  
☐ Other (HABS, HAER, NHL)  
☐ Local Designation

### Photography

Hanford Photography Lab:  
Neg #96010247-1 CN  
Photography Neg. No. HCRL: Roll 300, frames 3-4  
(Roll No. & Frame No.)  
View of North, west, and south exterior facades  
Date February 1996 and 10 June 1997

Photo at right: Roll 300, frame 4  
View of north and west facades

**Classification** ☐ District ☐ Site ☒ Building ☐ Structure ☐ Object  
**District Status** ☒ NR ☐ SR ☐ LR ☐ INV  
**Contributing** ☒ **Non-Contributing** ☐  
**District/Thematic Nomination Name** Hanford Site Manhattan Project and Cold War Era Historic District

## Description Section

### Materials & Features/Structural Types

**Building Type** Industry  
**Plan** Irregular  
**Structural System** Concrete Block  
**No. of Stories** Three

### Roof Type

☐ Gable ☐ Hip  
☒ Flat ☐ Pyramidal  
☐ Monitor ☐ Other (specify) \_\_\_\_\_  
☐ Gambrel  
☐ Shed

### Roof Material

☐ Wood Shingle  
☐ Wood Shake  
☐ Composition  
☐ Slate  
☒ Tar/Built-up  
☐ Tile  
☐ Metal (specify) \_\_\_\_\_  
☐ Other (specify) \_\_\_\_\_  
☐ Not visible

### Foundation

☐ Log ☐ Concrete  
☐ Post & Pier ☐ Block  
☐ Stone ☐ Poured  
☐ Brick ☒ Other (specify) \_\_\_\_\_  
☐ Not visible Reinforced concrete

### Cladding (Exterior Wall Surfaces)

- ☐ Log  
☐ Horizontal Wood Siding  
    ☐ Rustic/Drop  
    ☐ Clapboard  
☐ Wood Shingle  
☐ Board and Batten  
☐ Vertical Board  
☐ Asbestos/Asphalt  
☐ Brick  
☐ Stone  
☐ Stucco  
☐ Terra Cotta  
☒ Concrete/Concrete Block  
☐ Vinyl/Aluminum Siding  
☐ Metal (specify) \_\_\_\_\_  
☐ Other (specify) \_\_\_\_\_

### Integrity

(Include detailed description in  
**Description of Physical Appearance**)

	Intact	Slight	Moderate	Extensive
Changes to plan	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Changes to windows	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Changes to original cladding	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Changes to interior	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Other (specify) _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

State of Washington, Department of Community Development  
Office of Archaeology and Historic Preservation  
111 21st Avenue Southwest, Post Office Box 48343  
Olympia, Washington 98504-8343 (206)753-4011

## LOCATION SECTION

**Address** Building 271-T, 200 West Area  
**City/Town/County/Zip Code** Richland/Benton County/99352  
**Twp** 12 N **Range** 26 E **Section** 6 **I/4 Section** NW **1/4 1/4 Sec** NW  
**Tax No./Parcel No.** \_\_\_\_\_ **Acreage** \_\_\_\_\_  
**Quadrangle or map name** Gable Butte, Washington Quad. - 7.5 min. series, 1986  
**UTM References Zone** 11 **Easting** \_\_\_\_\_ **Northing** \_\_\_\_\_  
**Plat/Block/Lot** \_\_\_\_\_  
**Supplemental Map(s)** \_\_\_\_\_



### High Styles/Forms (Check one or more of the following)

- |   |   |
|---|---|
| <input type="checkbox"/> Greek Revival            | <input type="checkbox"/> Spanish Colonial Revival/Mediterranean |
| <input type="checkbox"/> Gothic Revival           | <input type="checkbox"/> Tudor Revival                          |
| <input type="checkbox"/> Italianate               | <input type="checkbox"/> Craftsman/Arts & Crafts                |
| <input type="checkbox"/> Second Empire            | <input type="checkbox"/> Bungalow                               |
| <input type="checkbox"/> Romanesque Revival       | <input type="checkbox"/> Prairie Style                          |
| <input type="checkbox"/> Stick Style              | <input type="checkbox"/> Art Deco/Art Moderne                   |
| <input type="checkbox"/> Queen Anne               | <input type="checkbox"/> Rustic Style                           |
| <input type="checkbox"/> Shingle Style            | <input type="checkbox"/> International Style                    |
| <input type="checkbox"/> Colonial Revival         | <input type="checkbox"/> Northwest Style                        |
| <input type="checkbox"/> Beaux Arts/Neoclassical  | <input type="checkbox"/> Commercial Vernacular                  |
| <input type="checkbox"/> Chicago/Commercial Style | <input type="checkbox"/> Residential Vernacular (see below)     |
| <input type="checkbox"/> American Foursquare      | <input checked="" type="checkbox"/> Other (specify)             |
| <input type="checkbox"/> Mission Revival          | <u>Industrial Vernacular</u>                                    |

### Vernacular House Types

- |   |  |
|---|--|
| <input type="checkbox"/> Gable Front          | <input type="checkbox"/> Cross Gable           |
| <input type="checkbox"/> Gable Front and Wing | <input type="checkbox"/> Pyramidal/Hipped      |
| <input type="checkbox"/> Side Gable           | <input type="checkbox"/> Other (specify) _____ |

## NARRATIVE SECTION

### Study Unit Themes (check one or more of the following)

☐ Agriculture  
☐ Architecture/Landscape Architecture  
☐ Arts  
☐ Commerce  
☐ Communications  
☐ Community Planning/Development

☐ Conservation  
☐ Education  
☐ Entertainment/Recreation  
☐ Ethnic Heritage (specify) \_\_\_\_\_  
☐ Health/Medicine  
☐ Manufacturing/Industry  
☐ Military

☐ Politics/Government/Law  
☐ Religion  
☐ Science & Engineering  
☐ Social Movements/Organizations  
☐ Transportation  
☒ Other (specify) Manhattan Project and Cold War Era  
☒ **Study Unit Sub-Theme(s)** Chemical Separation, Administrative Support

### Statement of Significance

Date of Construction 1943-44 Architect/Engineer/Builder E.I. du Pont de Nemours Corporation

☒ In the opinion of the surveyor, this property appears to meet the criteria of the National Register of Historic Places.

☒ In the opinion of the surveyor, this property is located in a potential historic district (National and/or local).

The 271-T Office Building was constructed during World War II as the Chemical Preparation and Service Building. It was attached to the long, west side of the 221-T Building (T-Plant) that housed the electrical, pipe, and operating galleries. The function of the 271-T Building was to house chemical make-up areas, sampling and instrumentation facilities for the fresh chemicals going into T-Plant to be used in that facility's bismuth phosphate radiochemical process. Its location adjacent to the galleries that control T-Plant's operations facilitated the transfer of chemicals into T-Plant and eased communication between the two facilities. The 271-T Building continued to perform the above functions throughout the T-Plant radiochemical processing mission, which ended in 1956. T-Plant then underwent about a year of decontamination of its own equipment, after which it became the Hanford Site's equipment decontamination facility. It functioned from 1957-1990 in that capacity. Throughout those years, the 271-T Building continued to function in its original roles, albeit now serving and supplying the decontamination mission. Because much of the chemical preparation equipment and instrumentation in the 271-T Building was not needed in the simpler decontamination work, some of this equipment was idled and removed. After 1957, the 271-T Building also housed offices for the 2706-T/TA decontamination annex building that was built just west/northwest of T-Plant for low-level decontamination work. In 1991, the decision was made to refurbish T-Plant and the 2706-T/TA facility to perform at least a 10-year decontamination role in the Hanford Site clean-up mission. Shortly afterward, a remodeling of the 271-T Building was undertaken in conjunction with upgrades at T-Plant and the 2706-T/TA facility. The 271-T Building was an integral, connected partner in the original, radiochemical operations at T-Plant that produced the plutonium for the Trinity Test and Nagasaki explosions. The 271-T Building's function of supplying the raw chemicals, mixing, and sampling them, and pumping them into the 221-T Building was essential to the function of T-Plant. Likewise, the administrative role of the 271-T Building, including the keeping of classified production records and log books, was closely linked to the primary functions of T-Plant. It is therefore the conclusion of the U.S. Department of Energy that Building 271-T is eligible for inclusion in the National Register of Historic Places under Criterion A as a contributing property within the Hanford Site Manhattan Project and Cold War Era Historic District.

### Description of Physical Appearance

The 271-T Building was constructed as a four-story (including a basement), reinforced concrete structure with concrete block exterior and interior walls. The facility was 58 feet by 170 feet by 67.83 feet with an area of 9860 square feet per floor. It was attached approximately midway to the back side of the 221-T Cell Building (T-Plant), although it was constructed independantly of T-Plant. The first floor of the 271-T Building is four feet above grade with two concrete loading platforms, one adjacent to the railroad spur that entered T-Plant from the northwest end, and the other at right angles for handling chemicals to and from railroad cars and trucks. An 8000 pound-capacity freight elevator was located at the end of the building adjacent to the railroad spur and served all four floors and permitted passage of small pieces of equipment into Building 221-T. The 271-T Building contained service areas and facilities for the operation of T-Plant including a chemical preparation area with a laboratory, offices, a communication center, change room facilities, a medical examination laboratory, small shops, and equipment for air treatment and compressed air. In total the building contains 44 rooms. The building's foundation and basement walls were a combination of reinforced concrete piers and walls with spread footings. Floor slabs are reinforced concrete varying in thickness from four inches to 12 inches and are finished with mastic tile in the restrooms, chemical laboratory, battery room, and mezzanine floor. The roof is reinforced concrete slab varying in thickness from four inches to six inches and is covered with built-up felt and gravel surfacing.

Basement: At the north end of the basement floor is a large storage room for supplies in addition to two large solution tanks which were supported from the floor and projected upward to an opening in the first floor. Two pumps were located nearby for distributing solutions from these tanks. The basement also contains an instrument repair room, shop, tool "crib" (storage bin area), and office. At the south end of the basement is a compressor room which supplied compressed air to the 211-T Tanks and to the 222-T, 224-T, and 291-T Buildings. Four air receivers were also located just outside the south end of the building. On the west side of the building, a pit was arranged to permit movement of large pieces of equipment into or out of the basement. A fan room is located between the compressor room and the shop which, in addition to supplying air for the 271-T Building, also directed an air supply to the basement gallery of the 221-T Building. A small electrical control room is located in back of the #2 stair tower and housed controls for the fan and compressor rooms.

First Floor: At the north end of the first floor is a large room used for storage of solid and liquid chemicals in crates, as well as dissolving facilities described above in connection with the basement. A pipe shaft is located to the rear of the two dissolving tanks which permitted ready access to all piping between floors and the 221-T Building. A second pipe shaft starts seven feet above the first floor at the south end of the building and extends likewise through the third floor. The central portion of the first floor contains two locker and wash rooms, a shower room, restroom, water heater room, and clean laundry room. The south end of the floor contains a first aid station, medical laboratory, waiting room, two rest rooms, and a battery room.

Second Floor: This floor contains eight offices, a file room, and a fire resistant record vault, a dispatcher room with two small adjacent communication rooms, a lunch room, two rest rooms, and two heater rooms located between the stair towers and the 221-T Building. The heater rooms supplied filtered and tempered air to the second floor gallery of T-Plant. In one of the small communication rooms was a 100-circuit switchboard and equipment for handling an independent inter-communication system serving the 211-T tanks area, and the 221-T, 222-T, and 224-T Buildings. The second room contained communication signal and control equipment for door interlocks.

Third Floor: The top floor consists mainly of a chemical preparation room containing a number of weighing, mixing, and storage tanks and distribution pumps. Several of the pumps were located on a concrete mezzanine floor 10 feet above the third floor level. For this work a chemical control (sampling) laboratory was provided. Two heater rooms also were provided behind the stair towers similar to the second floor arrangement. The #1 stair tower provided access to the roof. A portion of the roof was designed to support a 10,000 gallon tank for demineralized water in the event that it became necessary to use it for process. During 1948-49, the third floor of the 271-T Building was modified to house bismuth subnitrate preparation facilities.

T-Plant ceased its radiochemical processing mission in 1956, and became the Hanford Site equipment decontamination facility the following year. Over the years, part of the equipment from the 271-T chemical preparation areas and from the medical office and laboratory was removed. In the early 1990s, a major cleanout and modification of the 271-T Building was undertaken. More of the remaining chemical tanks, laboratory equipment, and early instrumentation were removed. The first floor was remodeled internally to accommodate new offices, computer access equipment and connections, and to provide a lunch room. On the second floor, offices were remodeled and the old lunch room was emptied with the space used for more offices. Approximately half of the third floor was remodeled into offices, and walls were constructed to isolate this area from remaining chemical tanks on the at floor. The basement was remodeled to become craft shops. Additionally, the fan room was inactivated and a heat pump system was installed.

In 1994, a small (24.75 feet by 34.75 feet) was added at the center of the first floor exterior of the building in order to house an entry control station to monitor and record personnel visiting T-Plant and the 271-T facility. The entryway was constructed of a concrete block foundation and half-walls, a full row of Plexiglas windows on the three exposed sides (north, west and south), and a metal roof that extends down to become the top five feet of the exterior wall.

#### Major Bibliographic References

Drawings H-2-1012 and W-6-9557.

E.I du Pont de Nemours Corporation. 1945. *Construction of Hanford Engineer Works: History of the Project, Volume III* . HAN-10970. Wilmington, Delaware.

Gerber, M.S. 1993. *Manhattan Project Buildings and Facilities at the Hanford Site: A Construction History* . WHC-MR-0425. Westinghouse Hanford Company, Richland, Washington.

Gerber, M.S. 1994. *A Brief History of the T-Plant Facility, Hanford Site* . WHC-MR-0452, Add.1. Westinghouse Hanford Company, Richland, Washington.

Shaw, D.F. 1948. "Directive for Bismuth Subnitrate Preparation Facilities." Directive No. HW-66. U.S. Atomic Energy Commission, Richland, Washington.